FINAL REPORT

Route 7 Corridor

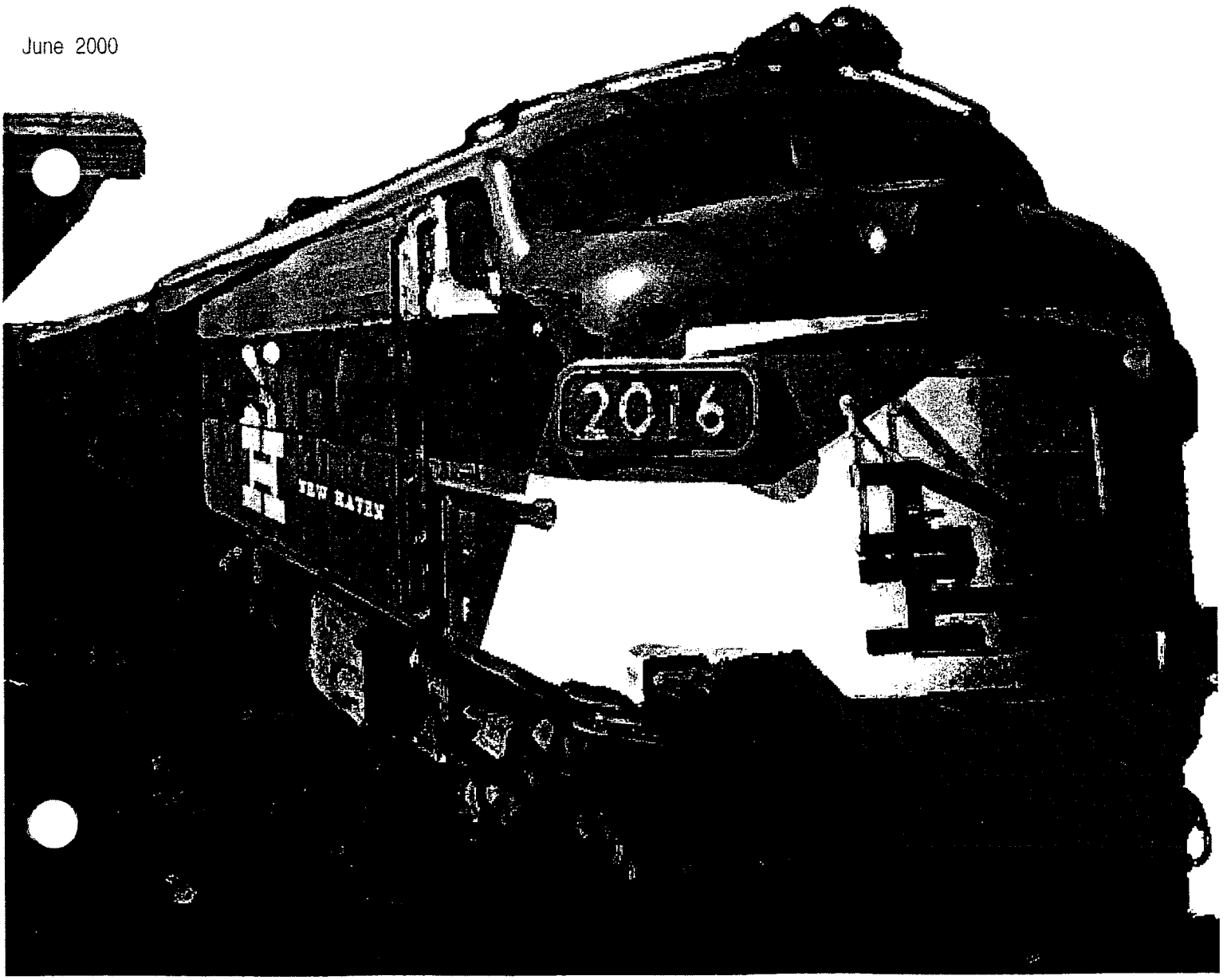
Travel Options Implementation Plan

Prepared for
South Western Regional
Planning Agency and
Housatonic Valley Council
of Elected Officials

Prepared by
Vanasse Hangen Brustlin, Inc.
Middletown, CT

in association with
KKO and Associates, Inc.

June 2000



TRAFFIC ENGINEERING STUDY FY98-99

ROUTE 7 CORRIDOR TRAVEL OPTIONS IMPLEMENTATION PLAN

PREPARED FOR: SOUTH WESTERN REGIONAL PLANNING AGENCY

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Prepared by:
Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, CT 06457
Tel: (860) 632-1500

Prepared for:
SWRPA
One Selleck Street
Norwalk, CT 06855
Tel: (203) 866-5543

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15. Supplementary Notes
This is the final report of a study to recommend commuter options along the Route 7 corridor between Norwalk and New Milford, CT.

16. Abstract

The Route 7 Travel Options Implementation Study was undertaken by the South Western Regional Planning Agency (SWRPA) and Housatonic Valley Council of Elected Officials (HVCEO) to evaluate transit and travel demand management improvement alternatives in the Route 7 corridor. The study aims to reduce traffic congestion and to increase mobility through the corridor, and provide travel options to commuters. The study's overall benefit, if implemented, will be an improved quality of life for commuters and residents in the corridor communities.

The results of the study are a list of transportation improvement projects and study recommendations for the South Western and Housatonic Valley regions. The projects focus on enhanced transit service along the corridor and enhancements to transit serving train stations to provide a "seamless" transit system. Train station enhancements are also recommended.

Implementation of the recommended projects is expected to result in a number of quantifiable and many unquantifiable benefits. The following benefits are expected:

- Increased transit ridership with potential to attract over 1,200 additional daily train riders (or 2,400 trips) and 208 daily bus trips,
- Increased rail capacity by 108 percent (measured in terms of seat-miles of service),
- Traffic reductions on Route 7 by as much as 2,000 vehicles per day, and
- Reductions in daily VOC and CO emissions.

Other, less measurable, but equally important benefits include:

- Increased commute options,
- Increased mobility along the corridor and in the region,
- Improved safety,
- Increased employment opportunities, and
- Improved commute convenience.

All of these benefits combine to promote improved quality of life in the region.

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Transportation, Planning, Transit, Commuter Options, Route 7		
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Executive Summary

Introduction

The Route 7 corridor between Norwalk and New Milford, Connecticut is a critical north-south transportation corridor linking high-density employment centers with rapidly growing residential communities. Many of the surrounding communities are experiencing significant increases in population in concert with the recent emergence of economic activity and employment opportunities adjacent to the corridor. This is particularly true in the municipalities of Stamford, Greenwich, and Norwalk where much of the job growth is concentrated. It is also true for several of the towns on the northern end of the Route 7 study corridor such as Bethel, Brookfield and New Milford where some of the fastest growing residential areas in the state are located. These regional population and employment trends are expected to continue with strong job growth in metropolitan New York City and along the I-95 corridor, coupled with strong residential growth at the northern end of the Route 7 corridor study area. As employment and population grows, so to does the travel demand. Subsequently, the Route 7 corridor has experienced increasing demands, congestion, air pollution, and safety issues.

The Route 7 Travel Options Implementation Study was undertaken by the South Western Regional Planning Agency (SWRPA) and Housatonic Valley Council of Elected Officials (HVCEO) to evaluate transit and travel demand management improvement alternatives in the Route 7 corridor. The study aims to reduce traffic congestion and to increase mobility through the corridor, and provide travel options to commuters. The study's overall benefit, if implemented, will be an improved quality of life for commuters and residents in the corridor communities.

Study Process

The study consisted of 5 major tasks including: 1) Identification of Existing Conditions and Issues, 2) Development of Improvement Recommendations including Institutional Recommendations, 3) Evaluation of Financial Considerations including Cost Estimates and Potential Funding Sources, 4) Identification of the Benefits from Plan Implementation, and 5) Market Research. The process consisted of extensive public outreach including meeting with a project Advisory Committee,

Public Workshops and individual meetings in corridor communities with municipal planners, business community members, and elected officials.

Through coordination with the project's Advisory Committee, the following plan goals and objectives were identified.

Goal:

1. Reduce traffic congestion
2. Improve air quality
3. Improve safety
4. Decrease commute time

Objectives:

1. Improve quality of life
2. Support economic growth where desired
3. Provide increased employment opportunities
4. Benefit employers
5. Increase mobility within the region
6. Improve commute convenience
7. Provide commuter choice programs and commute options
8. Promote mode shifts from the car to public mass transportation

Study Product

The results of the study are a list of transportation improvement projects and study recommendations for the South Western and Housatonic Valley regions. Although the projects outlined focus on transit improvements and strategies to increase the use of the region's public transportation services, the positive impact of the proposals outlined in this report go beyond transportation issues. For example, by providing commuters with viable and attractive alternatives to the private automobile, enhancements such as transit oriented services (TOS) can enhance the quality of life for surrounding residents and sustain residential and economic growth by encouraging development in closer proximity to transit stations. Cost estimates for each project or study has been developed as well as a discussion of potential funding sources. The following sections summarize the plan elements, institutional recommendations, recommended projects with costs, and the benefits from plan implementation.

Summary of Plan Elements

To develop a comprehensive Travel Options Implementation Plan for the Route 7 corridor, many transit and travel demand management alternatives were considered. Most elements that were discussed as possible improvements have been incorporated into the plan. Clearly, some elements are expected to be very effective in providing alternative travel options, while other elements compliment the base

program and further provide incentives to shift travel mode. The Train Service enhancements form the core of the Route 7 travel option recommendations.

This section provides a summary of the elements that have been packaged into the Route 7 Travel Options Implementation Plan. It also summarizes the recommendations with respect to institutional alternatives for implementation. Finally, this section presents a list of recommended projects, their costs and benefits.

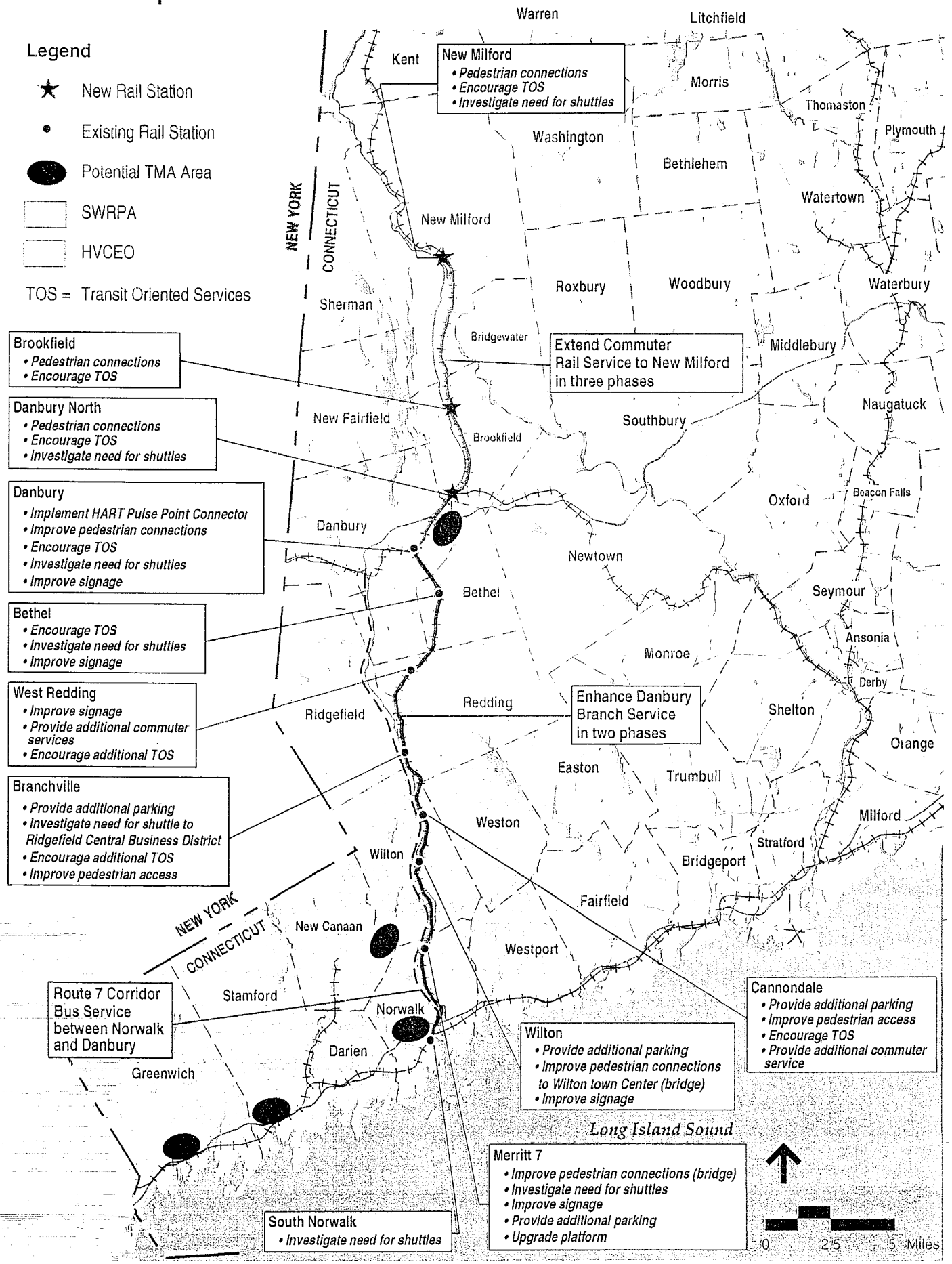
Figure ES-1 illustrates the recommended plan elements. The elements include:

Train Service Enhancements

Two basic packages of commuter rail service improvements have been developed. The package of improvements recommended for the South Norwalk – Danbury segment (referred to as the Enhanced Danbury Rail Service package) assumes that the new signal and communications system is installed on the branch allowing maximum operating speeds to be increased to 60 mph where the existing alignment permits. This package includes a two-phased approach to providing additional peak period through, mid-day, and reverse commute trains. The second package (referred to as the New Milford Extension) includes a three-phased approach geared towards implementing the 14.2-mile service extension from Danbury north to New Milford. A phased capital improvement program and operating plan have been developed that allow an incremental approach to the extension of service. The phased capital program for the service extension includes the cost of extending the new signal system to New Milford as part of the final phase of improvements. It is assumed that a minimal service extension can be accomplished without the extension of the signal system. Both packages seek to significantly improve service while requiring the smallest possible capital investment. This approach was taken to try to reconcile local desires for better rail service with ConnDOT's desire to closely manage its investments and expenditures for rail transit services. This approach should also improve the chances of funding being made available for the improvements, at least on a demonstration basis.

Figure ES-1

Elements of Implementation Plan



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Prepared for: South Western Regional Planning Agency

Prepared by: VHB June, 2000

Package 1: Enhanced Danbury Branch Rail Service

The Enhanced Danbury Branch Rail Service package has been developed into two separate yet complementary sets of phased enhancements. The first phase introduces new connecting peak period service, additional mid-day service, and limited reverse commute services. The Phase 2 enhancements introduce a new through roundtrip to New York, additional mid-day and additional reverse commuter service.

Phase 1 Service Enhancements

The Phase 1 Enhanced Danbury Service package includes the following elements:

- One new early morning shuttle trip from Wilton departing at 5:12 AM connecting with a New Haven Main Line train at South Norwalk for a 6:32 AM arrival in New York City.
- One new early morning shuttle trip from Danbury departing at 5:22 AM connecting with a New Haven Main Line train at South Norwalk for a 7:09 AM arrival in New York City. Connections provided at Stamford to Greenwich.
- Three new mid-day shuttles departing Danbury at 9:21 AM, 12:51 PM, and 3:46 PM. These three additional trains in conjunction with adjustments to the existing schedule of mid-day shuttle service result in approximate 90 to 120 minute headways for service to South Norwalk.
- One new evening reverse commute trip to South Norwalk departing from Danbury at 6:14 PM.
- Two new morning reverse commute trips from South Norwalk to Danbury with 6:37 AM and 7:55 AM arrival times.
- Three new mid-day trains from South Norwalk to Danbury departing at 10:41 AM, 3:35 PM and 4:35 PM. These three additional trains in conjunction with adjustments to the existing schedule of mid-day shuttle service result in 90 to 120 minute headways to Danbury.

In total, weekday service would be increased by 55 percent from 20 trains per day to 31 and travel times on the branch would be reduced by approximately 18 percent. This expanded service option would make more intensive use of the two shuttle trains currently assigned to the Danbury service and would require the addition of one new shuttle train.

Phase 2 Service Improvements

The Phase 2 Enhanced Danbury Service package includes the following elements that build upon the Phase 1 elements:

- One new early morning through trip from Danbury departing at 5:22 AM with a 7:09 AM arrival in New York City. Connections provided at Stamford to Greenwich.
- Two new mid-day trips from Danbury departing at 11:52 AM and 1:52 PM. These two additional trains in conjunction with adjustments to the Phase 1 schedule of

mid-day shuttle service result in approximate 60-minute headways to South Norwalk.

- One new late evening trip to South Norwalk departing from Danbury at 11:20 PM.
- One new morning reverse commute trip from South Norwalk to Danbury with 7:03 AM arrival time.
- Two new mid-day trains from South Norwalk departing at 11:08 AM and 12:08 PM. These two additional trains, in conjunction with adjustments to the Phase 1 schedule of mid-day shuttle service, result in 60-minute headways to Danbury.
- One new early evening through trip departing from New York City at 4:22 PM with a 6:10 PM arrival time in Danbury.

In total, weekday service would be increased by 23 percent from 31 trains per day to 38. The additional service would take advantage of the reduced travel times on the branch. This expanded service option would make more intensive use of the three shuttle trains assigned to the Danbury service and would require the addition of one equipment set for the through train.

Package 2: New Milford Extension Enhancements

The New Milford Extension Enhancements build from the Enhanced Danbury Service to incrementally implement an extension of service. In the initial phase (Phase 1), only the existing peak period through trains on the Danbury Branch are extended to New Milford. No intermediate station stops are provided on the extension. In Phase 2, select peak and mid-day trains are extended and the Danbury North and Brookfield station stops are introduced. For Phase 3, additional peak, mid-day, and evening services are provided.

Phase 1 Service Improvements

The Phase 1 New Milford Extension Service package includes the following elements:

- Track infrastructure improvements supporting 50-MPH service.
- Extension of the three existing peak period New York City through trains, departing to New Milford at 5:16 AM, 6:00 AM, and 6:34 AM.
- One station stop in New Milford.

In developing the service proposal, the primary objective was to minimize the capital requirements to initiate a service extension. This objective is met by funding the track upgrade and using the existing New Milford station as the only stop.

Phase 2 Service Improvements

The Phase 2 New Milford Extension Service package includes the following elements that build upon both the Phase 1 New Milford and Phase 1 Enhanced Danbury service elements:

- Additional track and bridge improvements.
- Stations at Danbury North and in Brookfield.

- Extension of two additional morning inbound peak period shuttle trains departing New Milford at 5:02 AM and 7:42 AM.
- Extension of one additional evening outbound peak period shuttle train arriving in New Milford at 6:35 PM.
- Extension of two additional evening outbound shuttle trains arriving in New Milford at 9:13 PM, and 10:14 PM.
- Extension of three mid-day roundtrips arriving in New Milford at 11:40 AM, 1:46 PM and 4:40 PM and departing New Milford at 9:01 AM, 12:31 PM, and 2:29 PM.
- Extension of one morning peak period reverse commute trip arriving in New Milford at 8:18 AM.
- Extension of one evening peak period reverse commute trip departing New Milford at 4:59 PM.
- Extension of two evening inbound trains departing New Milford at 7:24 PM and 9:52 PM.

This service proposal allows for an expanded peak period service while providing mid-day and late evening service. This expanded service option would make more intensive use of the three shuttle trains assigned to the Danbury service as part of the Phase 1 Enhanced Danbury Service proposal.

Phase 3 Service Improvements

The Phase 3 New Milford Extension Service package includes the following elements that build upon the Phase 1 and 2 New Milford and Phase 2 Enhanced Danbury service elements:

- Extension of the signal and communications system to New Milford.
- Extension of one additional evening outbound peak period train arriving in New Milford at 6:10 PM.
- Extension of a fourth outbound peak period through train from New York City arriving in New Milford at 6:31 PM.
- Extension of three mid-day roundtrips to Danbury North arriving at 10:55 AM, 12:55 PM, and 2:55 PM and departing at 11:47 AM, 1:47 PM, and 3:47 PM.
- Extension of one additional morning peak period reverse commute trip to New Milford arriving at 7:00 AM and one trip to Danbury North arriving at 7:08 AM.
- Extension of one evening peak period reverse commute from Danbury North departing at 5:54 PM.

This service proposal continues to allow for the expansion of peak period service and mid-day service. The Danbury North station receives hourly mid-day service while New Milford trains operate on two-hour headways. New Milford also receives the benefit of the additional through round trip to New York. This expanded service option would make more intensive use of the three shuttle trains assigned to the Danbury service as part of the Phase 1 Enhanced Danbury Service proposal.

Bus/Shuttle Service Enhancements

To provide more options for commuter choice, a number of complimentary bus and shuttle service enhancements are recommended. These services will provide for seamless intermodal options. They include:

- Route 7 Corridor Bus Service: Norwalk to Danbury
  - Bus service along Route 7 corridor from Norwalk to Danbury, serving major employment centers and the Danbury Fair Mall
  - Service between HART's Pulse Point and NTD's WHEELS Hub
  - 60-minute headways
  - 75-minute one-way travel time

- Enhanced HART Bus Service (Pulse Point Connector) – connecting the HART pulse point to the Danbury Station

- Commuter Connections Study and Implementation of a Program (through MetroPool, the regional planning agencies or local transit providers) to research the specific needs for and then enhance train station connections to major employers.

Travel Demand Management Strategies

- Station Enhancements (detailed in Table ES-1) such as:
  - Improved Security
  - Commuter Conveniences (Transit Oriented Services)
  - Commuter Information Kiosks
  - Adequate Parking
  - Bicycle and Pedestrian Enhancements
- Conduct Danbury Branch Transit Intelligent Transportation Systems (ITS) Study
- Feasibility studies of additional commuter rail stations in Norwalk and Redding
- Linkages within Transit System such as:
  - Shuttles/Bus Service (Destination Stations)
  - Pedestrian Connections to Nearby Destinations
  - Bicycle Facilities
- Investigation of "Universal Transit Card" Feasibility- Initiated by SWRPA FY 1999-2000
- Conduct Transit Oriented Development Feasibility Study
- Enhanced Marketing of Public Transportation Resources and Improvements by:
  - Transit Agencies
  - MetroPool
  - ConnDOT
  - Consider Transit Fare Reduction to Further Stimulate Increased Transit Ridership

Table ES-1:
Commuter Rail Station Enhancement Summary

Station	Recommended Improvements	Estimated Cost*
Merritt 7 Station (Norwalk)	• Improved directional signage to station for vehicles. • Build pedestrian bridge to connect station to office uses on the east side of the railroad. • Upgrade platform and proposed pedestrian overpass to be ADA compliant. • Provide informational Kiosks.	Moderate
Wilton Station (Wilton)	• Increase parking supply. • Improved signage on Route 7 is needed, as the station is not visible from the road. • A pedestrian bridge should be built over the Norwalk River to provide easy access from the Wilton town center to the station. • Provide informational Kiosks.	Moderate
Cannondale Station (Wilton)	• Increase parking supply. • Encourage the development of transit oriented services. • Pedestrian access between the station and the surrounding residential and retail areas should be improved. • Provide informational Kiosks.	Moderate
Branchville Station (Ridgefield)	• Increase parking supply serving the station. Prepare a study of the options available to increase supply of convenient parking at this location. • If additional convenient parking is not possible at the existing station, examine the feasibility of constructing a new station within the Branchville area in the vicinity of the intersection of Routes 7 and 102. • Improve pedestrian access along Route 7. • Provide informational Kiosks.	High
West Redding (Redding)	• Encourage the provision of additional services benefiting commuters, within the framework of the traditional West Redding setting, as demand warrants. • Provide a station sign at the driveway entrance. • Increase station parking as demand warrants. • Provide informational Kiosks. • Increase station parking as demand warrants.	Low
Bethel Station (Bethel)	• Increase station parking as demand warrants. • Improved pathfinder signs to provide direction to the station for vehicles. • Provide informational Kiosks.	Low
Danbury Station (Danbury)	• Improved pathfinder signs to provide direction to the station for vehicles and to the downtown dining and entertainment district for pedestrians. • Offer food service during peak commuting times. • Improve pedestrian access to station by providing better roadway crossing in the vicinity of the station. • Provide informational Kiosks.	Low

* Estimated Cost Ranges: Low = Less than $100,000, Moderate = $100,000 to $500,000, High = Over $500,000.
Source: VHB Route 7 Travel Options Implementation Plan
Prepared for: South Western Regional Planning Agency
Prepared by: VHB, June 2000

Transit Oriented Service Support Strategies

To implement the elements of the recommended improvement plan, the following institutional recommendations should be considered:

- Establish Route 7 Travel Options Coalition to:
  - Advocate for recommendation of this study,
  - Identify "Champions" for implementation of the various elements in the recommended plan, and
  - Oversee the implementation of the recommendations.

- Support/Encourage Ridesharing Initiatives for Enhanced MetroPool Presence:
  - Closer ties with employers
  - Stronger outreach to employees
  - Better communication with transportation community

- Conduct a Service Evaluation and Governance Study to evaluate operating costs and cost structure for Danbury Branch line. This could eventually allow the Danbury Branch to provide more service under a more cost-effective arrangement.

- Pursue extending Danbury Branch service to Stamford, including examination of the operational feasibility of such an extension with regards to main line operations.

- Evaluate feasibility, benefits and cost of electrifying branch line to Wilton.

- Consider Formation of Transportation Management Associations (TMAs) as a potential long-term implementation strategy.

Recommended Projects

The previous sections presented various improvement elements to expand travel options in the Route 7 corridor. This section packages these elements into specific projects for implementation and presents the cost estimates for each project. Cost estimates are separated into infrastructure, equipment, and annual operating costs. Where a more in-depth study is recommended, an estimate of the cost for that study is provided. Table ES-2 summarizes the list of recommended projects as a result of this study.

Five rail service enhancement projects are specifically listed, including a two-phased Enhanced Danbury Branch Service, which provides additional peak period through, mid-day, and reverse commute trains. The three-phased New Milford Extension implements a 14.2-mile service extension from Danbury to New Milford. In addition

to the rail service improvement projects, it is recommended that a feasibility study be completed to evaluate new rail stations in Norwalk (2 stations) and Redding/Georgetown (1 station). Finally, as part of the rail recommendations, a Branch line Service Evaluation and Governance Study is recommended. A total of over 57 million dollars in capital costs, approximately 6 million dollars in additional annual operating costs, and $600,000 in study costs are included in the list of rail enhancement projects.

Three bus enhancement projects are also listed in Table ES-2. Two specific bus services are noted including the Route 7 corridor bus service from Norwalk to Danbury and a new fixed-route bus serving the Danbury Rail Station and the HART pulse point in Danbury. A rail/employment site shuttle connection study is also recommended. This study should evaluate the need and specific operating requirements for shuttle service between destination rail stations and work sites. Municipalities such as Stamford, Greenwich, Darien, Norwalk, and Danbury should be targeted for this study through detailed outreach to large area employers. According to Metro Pool, some shuttles between Danbury station and work sites already exist. As rail service improvements are implemented, the demand for shuttles should increase. Also, once the New Milford extension has been implemented, the demand for shuttle service at the Danbury station will increase. A timeline of potential implementation sequences of the various recommended projects is displayed in Table ES-3.

A variety of other projects are also listed as follows:

- Pursue extension of Danbury branch line service to Stamford.
- Train station enhancements to encourage and facilitate the use of rail as a travel option.
- A Transit Oriented Development (TOD) feasibility study to guide zoning and transit supportive development decisions in the future.
- A feasibility study to investigate the application of intelligent transportation systems (ITS) on the Danbury Branch.
- A feasibility study to investigate the implementation of a Universal Transit Card.
- Formation of a Route 7 Travel Options Coalition to oversee the implementation of the projects recommended as part of this study.
- A feasibility study to evaluate benefits and costs to electrify branch line.

T ES-2
REC .MENDED
PROJECTS

PROJECT No. Name	CONCEPTUAL COST ESTIMATES CAPITAL Infrastructure	Equipment	Total	ANNUAL OPERATING	STUDY COST	BENEFITS/COMMENTS
RAIL						
1 Enhanced Danbury Branch Service - Phase 1*	$0	$5,300,000	$5,300,000	$1,314,084	$0	Potential for over 400 new dialy riders (800 trips)
2 Enhanced Danbury Branch Service - Phase 2*	$0	$12,900,000	$12,900,000	$895,712	$0	Potential to add almost 250 new riders above Phase 1 (500 trips)
Sub-Total Enhanced Danbury Service	$0	$18,200,000	$18,200,000	$2,209,796	$0	Potential for 650 new daily riders (1300 trips)
3 New Milford Extension - Phase 1*	$10,800,458	$2,800,000	$13,600,458	$1,775,456	$0	Potential for almost 150 new daily riders (300 trips)
4 New Milford Extension - Phase 2*	$6,261,906	$0	$6,261,906	$682,239	$0	Potential to add 320 additional riders over Phase 1 (640 trips)
5 New Milford Extension - Phase 3*	$12,685,004	$1,400,000	$14,085,004	$1,053,380	$0	Potential to add 60 additional daily riders over Phase II (120 trips)
Sub-Total New Milford Extension	$29,747,368	$4,200,000	$33,947,368	$3,511,075	$0	Potential for 520 new daily riders (1040 trips)
6 Norwalk Station(s) Feasibility Study	$0	$0	$4,000,000	$30,000	$200,000	Ridership/Operations/Concepts
7 Redding Station Feasibility Study	$0	$0	$0	$0	$150,000	Ridership/Operations/Concepts
8 Branchline Service Evaluation and Governance Study	$0	$0	$0	$0	$250,000	Examination of Costs/management
9 Pursue extension of branchline service to Stamford	$0	$0	$0	$0	$0	Examine operational feasibility with respect to main line operations.
10 Evaluate Electrification of branchline	$0	$0	$0	$0	$275,000	Examine feasibility, benefits & costs
Sub-Total Rail Projects	$29,747,368	$22,400,000	$56,147,368	$5,750,871	$875,000	Potential for 1,170 new daily rail riders (2,340 trips)
BUS						
11 Route 7 Corridor Bus Service	$0	$0	$0	$615,000	$0	Alternative travel mode servicing over 7,000 jobs along the corridor.
12 HART Pulse Point Fixed Route Service	$0	$0	$0	$185,000	$0	
13 Rail/Employment Sites Shuttle Connections Study	$0	$0	$0	$0	$150,000	Might be undertaken by local transit providers, regional planning agencies, or MetroPool through expanded outreach to employers
Sub-Total Bus Projects	$0	$0	$0	$800,000	$150,000	
SUPPORT STRATEGIES						
14 Train Station Enhancements	$2,000,000	$0	$2,000,000	$0	$0	Varies by Station: Stations requiring significant enhancements include: Branchville, Cannondale, Wilton and Merritt 7
15 Transit Oriented Development Feasibility Study	$0	$0	$0	$0	$250,000	
16 Danbury Branch Transit ITS Study	$0	$0	$0	$0	$175,000	Applicability to Danbury Branch to enhance customer service
17 Universal Transit Card Feasibility Study	$0	$0	$0	$0	$100,000	Initiated by SWRPA in FY99-2000
18 Establish Route 7 Travel Options Coalition	$0	$0	$0	$0	$0	To advocate for and oversee implementation of transportation recommendations in the corridor.
Sub-Total Other Projects	$2,000,000	$0	$2,000,000	$0	$525,000	
TOTAL	$31,747,368	$22,400,000	$58,147,368	$6,550,871	$1,550,000	

* The costs presented are incremental costs for each phase of the project (i.e. the total New Milford Extension costs equal the Phase 1 + 2 + 3 costs.

Source: VHB

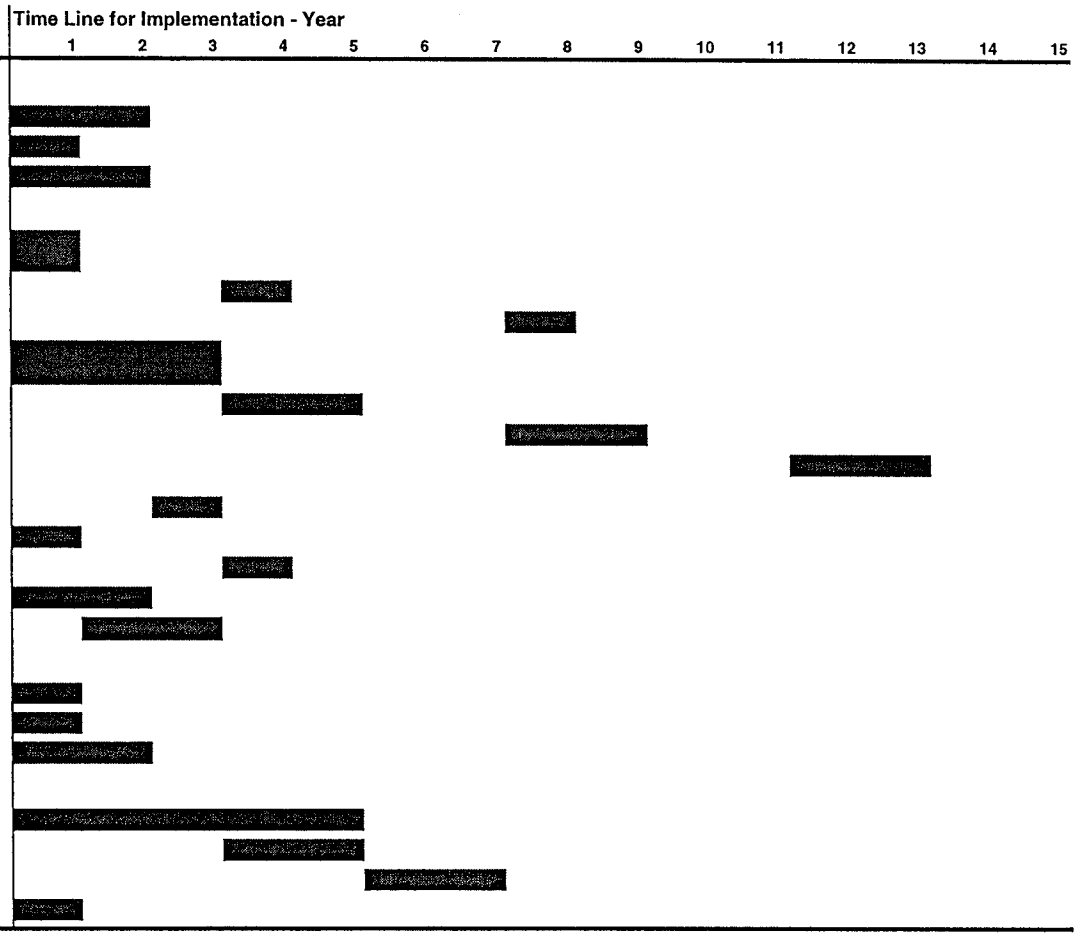
Prepared for: South Western Regional Planning Agency

Prepared by: Vanasse Hangen Brustlin, Inc.

June 2000

Table ES-3
Route 7 Travel Options Implementation Plan
Summary of Potential Project Sequencing

Project/Initiative	Status/Priority	Comments
PROGRAMMED PROJECTS/INITIATIVES		
Installation of CTC Signal System on Line	Programmed	Essential for Service Improvements
Universal Transit Card Feasibility Study	Underway	Initiated by SWRPA
Rail Parking Study for Branch Line Stations	Programmed	Rail station governance study
RAIL PROJECTS		
Extend All Branch Line Shuttle Service to Stamford	Early Action Item	Feasible once Stamford Station construction complete
Enhanced Danbury Branch Service - Phase I		
Enhanced Danbury Branch Service - Phase II		
New Milford Extension: Planning and Design		Prel. Design/Env 18 mos. Final Design 18 mos.[1]
New Milford Extension - Phase I		Construction/Implementation
New Milford Extension - Phase II		2 year trial period btwn phases
New Milford Extension - Phase III		2 year trial period btwn phases
Norwalk Station(s) Feasibility Study		
Branchville Station Study	High Priority	RPA Initiative?
Redding Station Feasibility Study		RPA Initiative?
Branchline Service Evaluation and Governance Study	High Priority	
Evaluate Electrification of Branchline		
BUS PROJECTS		
Route 7 Corridor Bus Service	Early Action Item	Coordinated between HART/NTD
HART Pulse Point Fixed Route Service	Early Action Item	HART to undertake
Rail/Employment Site Shuttle Connections Study	High Priority	Requires frequent updates
SUPPORT STRATEGIES		
Train Station Enhancements	Ongoing effort	Requires local coordination
Transit Oriented Development Feasibility Study		RPA Iniative
Danbury Branch Transit ITS Study		RPA Iniative
Establish Route 7 Travel Options Coalition	Early Action Item	Key Rt. 7 AC members



Source: VHB
Prepared for South Western Regional Planning Agency
Prepared by: Vanasse Hangen Brustlin, Inc., June 2000

Notes
1 Assumes environmental planning, preliminary design, and final design completed at same time for all three phases of service

Benefits From Plan Implementation

The Route 7 TOS is a customer-based plan that will expand commuter choice and enhance the quality of life within and outside the region. Implementation of the recommended projects is expected to result in a number of benefits. Some of those benefits can be estimated and include:

- Maximizing Public Infrastructure Investments by Increasing Transit Capacity Ridership
- Reduced Traffic Volumes within the Route 7 Corridor
- Improved Air Quality

The following paragraphs provide a brief summary of the plans benefits with respect to these three items. It is important to note that many other benefits will be realized from implementation of the recommended projects. These benefits, although difficult to quantify, include:

- Provide mitigation for construction impacts during Route 7 roadway improvement projects
- Increased commute convenience
- Increased mobility within the corridor
- Increased travel options
- Reduced commute times
- Expanded workforce for employers
- Increased job opportunities

These benefits support continued economic growth and promote high quality of life in the region.

Transit Ridership Increases: Rail

The proposed rail enhancements on the Danbury Branch consist of a phased implementation plan. Table ES-4 presents the estimated new daily riders under the various proposed rail enhancement phases. As shown, 876 additional riders are expected to board the Danbury Branch between 1999 and 2015 with no improvements to service. This represents an almost 70 percent increase in ridership due to a combination of population growth and highway congestion resulting in mode changes.

Table ES-4:
Estimated New Daily Southbound Riders in 2015 with Implementation of Proposed Rail Enhancements

Proposed Rail Enhancement	Estimated New Daily SB Riders	Change from Previous Phase
Ridership increases if no improvements are made*	876	N/A
Enhanced Danbury Branch: Phase 1	407	407
Enhanced Danbury Branch: Phase 2	649	242
New Milford Extension: Phase 1	160	160
New Milford Extension: Phase 2	515	355
New Milford Extension: Phase 3	559	44
Enhanced Danbury Branch Phase 1 + New Milford Extension Phase 2	922	922
Enhanced Danbury Branch Phase 2 + New Milford Extension Phase 3	1,208	286

Source: VHB

* Represents growth in rail ridership between current levels and 2015 without proposed rail enhancements and without parking constraints.

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Phase 1 of the Enhanced Danbury Branch package is expected to attract over 400 new daily riders and Phase 2 is expected to attract an additional 242 riders for a total of almost 650 new daily riders if both phases of the improvement package are implemented.

The proposed extension of the service to New Milford was developed in a three-phased approach. Phase 1 is expected to attract 160 new daily riders. Phase 2 and Phase 3 are expected to attract an additional 355and 44 daily riders respectively. A total of 559 additional daily riders might use rail service if the full New Milford Extension package is implemented.

By combining these rail enhancement packages (Danbury Branch Enhancement Phase 1 with New Milford Extension Phase 2 and Danbury Branch Enhancements Phase 2 with New Milford Extension Phase 3) an estimated 922 and 1,208 additional daily riders could be expected. Combined with the rail ridership growth projected for 2015 with no improvements, a maximum of 2,084 new southbound riders could be realized.

Transit Ridership Increases: Bus

The proposed Route 7 corridor bus service consists of hourly bus service between Norwalk and Danbury. It is estimated that up to 208 new bus trips will be served by implementing this bus service.

Train Capacity

Table ES-5 presents a summary of the increase in train capacity under each improvement scenario. The train capacity is shown in both seats and seat-miles.

As shown in Table ES-5, implementation of the full rail enhancement program will increase the number of daily seats by over 70 percent. When evaluating the number of seat-miles added to the service, an increase of 108 percent could be realized. Because a detailed origin and destination survey was not conducted as part of this study, a comparison of ridership (or train loadings) to available seat-miles is not possible. This type of analysis would provide more information with respect to available capacity and peak load points on the rail line. It is important to note, however, that the increase in rail service capacity proposed is significant and should be viewed as significant additional transportation capacity in the corridor to address traffic congestion and commuter options in the regions.

Table ES-5:
Summary of Train Capacity for Each Improvement Scenario
(Seats and Seat-Miles)

	Weekday Trains			Weekday	Weekday
Service	Through	Shuttle	Total	Seats	Seat-Miles
Existing	6	14	20	9,172	449,585
Enhanced Danbury – Phase I	6	25	25	12,435	548,076
Enhanced Danbury – Phase II	8	30	30	15,750	711,180
New Milford Ext. – Phase I	6	14	14	9,696	621,119
New Milford Ext. – Phase II	6	25	25	12,435	724,653
New Milford Ext. – Phase III	8	30	30	15,750	934,830

Source:VHB
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Traffic Volumes along Route 7 Corridor

With increased transit ridership along the corridor, a corresponding decrease in traffic volume would be realized. The daily traffic volumes estimated for Route 7 under the various improvement scenarios were calculated and are shown in Table ES-6.

Table ES-6:
Estimated Route 7 Daily Traffic Volume Reduction

Proposed Rail Improvement	Cumulative Totals of Estimated New Daily Riders	Estimated Route 7 Daily Traffic Volume Reduction*
Enhanced Danbury Branch: Phase 1	407	666
Enhanced Danbury Branch: Phase 2	649	1,062
New Milford Extension: Phase 1	160	261
Enhanced Danbury Branch Phase 1 + New Milford Extension Phase 2	922	1,509
Enhanced Danbury Branch Phase 2 + New Milford Extension Phase 3	1,208	1,977

*Assumes daily round trip with 1.1 persons per vehicle and 90 percent of total vehicle reduction from Route 7.
Source: VHB
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Implementation of various phases of the proposed rail enhancements has the potential to reduce traffic volume on Route 7 by almost 2,000 vehicles per day. This reduction represents the estimated total number of vehicles no longer travelling on Route 7, not the estimated traffic reduction in any one specific location. Assuming that a large percentage of this potential reduction, say 80 percent, is concentrated at the southern end of the corridor, then almost 1,600 daily vehicles per day could potentially be reduced from Route 7 just north of I-95. This represents over a 2 percent daily traffic reduction at the southern end of the corridor when compared with projected 2015 traffic volumes. These traffic reductions would also benefit east-west corridors such as I-95, Route 15, and Route 1 as commuters traveling to destinations between Norwalk and New York City choose to use the enhanced rail system.

Air Quality Benefits and Impacts

An air quality analysis was conducted to evaluate the benefits and impacts on regional emissions with implementation of the proposed rail. The rail enhancements are expected to provide additional rail service to motorists who ordinarily travel along the Route 7 corridor by motor vehicle. This shift in travel mode is expected to reduce motor vehicle emissions and the increased train service is expected to increase train emissions.

The air quality analysis calculated the change in emissions attributable to the various phases of the rail enhancement program. The changes in emissions were determined using projected ridership, origin-destination assumptions, Connecticut-specific motor vehicle emission rates, and locomotive emission rates. The results demonstrate that implementation of the proposed rail enhancements Plan will result in reductions of VOC and CO emissions based upon the number of people projected to ride the train

under each phase. Increases in the amount of NOx is projected after plan implementation due to the emissions characteristics of diesel locomotives.

The air quality analysis evaluated the change in daily (24-hour period) emissions for Volatile Organic Compounds (VOC), Carbon Monoxide (CO), and Oxides of Nitrogen (NOx). The changes in emissions were calculated for Existing (1999) and future (2015) No-Build and Build conditions. Table ES-7 presents the changes of VOC, CO, and NOx emissions for the 2015 No-Build and Build Conditions under Package 1 and Package 2.

Table ES-7:
2015 Emissions Results

	Change in Emissions*					
	VOC		CO		NOx	
	(Kg/Day)	(Lbs/Day)	(Kg/Day)	(Lbs/Day)	(Kg/Day)	(Lbs/Day)
Enhanced Danbury Branch Service						
Phase 1	-32	-70	-248	-546	+473	+1,041
Phase 2	-35	-77	-270	-594	+539	+1,185
New Milford Extension						
Phase 1	-40	-88	-285	-627	+388	+854
No Extension	-32	-70	-248	-546	+473	+1,041
Phase 2	-51	-112	-367	-807	+519	+1,142
No Extension	-35	-77	-270	-594	+539	+1,185
Phase 3	-48	-106	-372	-818	+737	+1,621

* Change in Emissions represents difference between Vehicle Emissions and Train Emissions, based on ridership projections. A negative number indicates improvements in air quality or reductions of emissions.
Source: VHB
Route 7 Travel Options Implementation Plan
Prepared for: South Western Regional Planning Agency
Prepared by: VHB, June 2000

These emission estimates represent the emissions for vehicle trips that are being eliminated and new train operations resulting from implementation of the rail enhancements. Negative numbers represent reductions in regional emissions for that pollutant, or an improvement in air quality. Positive numbers represent an increase in emissions, or a decline in air quality.

Table ES-7 indicates that emissions of VOC and CO will decrease under each of the scenarios, indicating air quality benefits from commuters shifting from motor vehicles to trains. However, NOx emissions from locomotive line-haul and idling activities result in higher emissions than the corresponding reductions from commuter-related vehicle emissions. This is attributable to the emissions characteristics of diesel locomotive engines.

It is important to note that future-year train emission estimates are based on emission rates from current locomotive engine technology. It is expected that over time EPA will require newer locomotives to meet lower emission rates and greater fuel efficiencies will become available. Therefore, the reported increase in NOx emissions may be overstated and the emission reductions of VOCs and CO may be even greater.

Next Steps

Market Research

In order to gauge the level of public support for the recommendations in this study, a market research study was conducted to "test" the recommendations. A detailed summary of the market research results is presented in a technical memorandum published separately and included in the Appendix of this report. The purpose of the market research efforts was three-fold and included:

- Test the recommendations in order to modify as necessary to meet the needs of commuters,
- Fine-tune the expected benefits (such as ridership estimates) from plan implementation, and
- Document the level of public support for the proposed projects.

The summary of survey results indicates strong support for many of the recommendations in the Route 7 Travel Options Implementation Study. The data also served as input into many of the ridership assumptions in the study. By understanding the relative importance of the various elements of the recommended plan, the project team and implementing agencies can begin to prioritize each project. As noted above, the most important travel option improvements indicated in the market survey included:

- Both reliable and possibly free parking at transit stations,
- Transit fare reductions and simplified fare collection,
- Additional morning peak hour trains, and
- Extension of rail service north of Danbury to New Milford.

Of particular note was the strong support for the extension of service to New Milford from respondents in communities in the northern end of the corridor (New Milford, Brookfield, and Danbury).

Somewhat important travel option improvements included:

- Additional weekend trains,
- Additional reverse-commute (or northbound) trains, and
- On-board food/beverage service.

In terms of train station enhancements, the following items were noted as most important:

- Improved security,
- Bank service/ATM,
- Food service,
- News Stand, and
- A convenience store.

Generally, with the exception of reliable and possibly free parking, commuters seemed most supportive of actual service enhancements over train station enhancements.

With respect to support services, such as bus service enhancements and shuttle service to and from train stations, there was relatively strong support for an express bus service along the Route 7 corridor between Danbury and Norwalk. Over 30 percent of respondents indicated that they were somewhat or very likely to use the express bus service.

Shuttle service from home to train stations and from train stations to place of work received particularly high support with over 50 percent of respondents indicating that they were somewhat or very likely to use the service. Support for train station shuttle service, especially from the destination train station to place of work, is consistent with input from the public and the advisory committee over the course of the study. As such, development of such service should be a high priority.

All of these findings strongly support the recommendations made for the Route 7 Travel Options Implementation Study. It is clear that the projects and elements with the highest level of public support and of highest priority should include:

- Provision of reliable, and possibly free parking, at transit stations,
- Provisions for train station shuttle service,
- Route 7 Corridor Bus Service
- Additional morning train service,
- Extension of rail service to New Milford, and
- Improved security at train stations.

Route 7 Travel Options Action Coalition

Implementation of the recommendations from this study should start with establishing the Route 7 Travel Options Coalition to oversee the implementation of all other study recommendations. The project advisory committee from this study could be the starting point in forming this Coalition. To implement and oversee the recommendations in this study, the Coalition should:

- Prioritize projects,

- Identify who will implement various projects/recommendations,
- Identify where funding for each action item is available, and
- Lobby for implementation with local and state representatives.